UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,844	02/01/2001	Linda M. Braun	BRAUN1-18-15	3565

7590 12/03/2003

Glen E. Books, Esq.
Lowenstein Sandler PC
65 Livingston Avenue
Roseland, NJ 07068

EXAMINER	
WANG, GEORGE Y	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/773,844	BRAUN ET AL.	
	Examiner	Art Unit	
	George Y. Wang	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6 and 8-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6 and 8-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (U.S. Patent No. 5,018,816, from hereinafter "Murray") in view Soref (U.S. Patent No 4,671,605, from hereinafter "Soref") and Meli (U.S. Patent No. 5,793,508).

Murray discloses a variable optical delay line (col. 1, lines 7-9) having a plurality of fibers (fig. 4, ref. 2, 3, 5, 6) where each fiber has a first end disposed in a first linear

array and a second end disposed in a second linear array, each fiber comprising a first parallel region, a curved region, and a second parallel region such that the first regions of the fibers are parallel to each other and the second parallel regions are also parallel to each other and where the fibers differ in curvature to provide a series of differing path lengths. Murray further teaches an optical switch (fig. 1, ref. 9) for switching at least one input signal among the fibers.

However, the reference fails to specifically disclose fibers that differ the radii of curvature to provide differing path lengths that are monotonically different and a plurality of separately of reflectors

Soref discloses a variable optical delay line that has fibers that differ the radii of curvature to provide differing path lengths that are monotonically different (fig. 1, ref. 26, 28). Meli discloses an optical telecommunications system having wavelength division multiplexers and delay lines that use a Bragg reflective element that is switchable between reflection and transmission (col. 5, lines 23-30; fig. 1, ref. 13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have path lengths that differ monotonically since one would be motivated by a predetermined delay signal. Because it is well known that an optical time delay is a direct function of optical length (Murray, col. 4, lines 22-39; Soref, col. 6, lines 21-25). Without this predetermined, monotonic difference in optical fiber length, the incremental difference in the transmission distances could not effectively be provided (Murray, col. 4, lines 39-41; Soref, col. 34-59). Therefore, for function, reliability, and accuracy, it would have been obvious to include path lengths that differ

monontonically. It would have been obvious to one of ordinary skill in the art the time the invention was made to use a plurality of switchable reflectors since one would be motivated by their ability to reflect radiation in a narrow wavelength band and transmit the radiation outside of this band (col. 5, lines 23-30). Furthermore, because the refractive index has a periodic variation, the signal portions are reflected at each index change in a timed relationship, which is ideal for optical delay systems (col. 5, lines 23-30).

Regarding claims 3 and 6, Murray et al. discloses the variable optical delay line as recited above. However, Murray fails to specifically teach a reflective Bragg grating.

Meli discloses an optical telecommunications system having wavelength division multiplexers and delay lines that use a reflective Bragg grating (col. 5, lines 23-30; fig. 1, ref. 13).

It would have been obvious to one of ordinary skill in the art the time the invention was made to use a reflective Bragg grating since one would be motivated by its ability to reflect radiation in a narrow wavelength band and transmit the radiation outside of this band (col. 5, lines 23-30). Furthermore, because the refractive index has a periodic variation, the Bragg grating reflects signal portions at each index change in a timed relationship, which is ideal for optical delay systems (col. 5, lines 23-30).

3. Claims 2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray, Soref, and Meli in view of Bishop et al. (U.S. Patent No. 6,356,377, from hereinafter "Bishop").

4. As to claim 2, Murray discloses the variable optical delay line as recited above. However, the reference fails to specifically disclose an optical switch that utilizes a micro-mechanical mirror (MEM) optical switch.

Bishop discloses a variable optical delay line that uses a 1xN MEMs device as an optical switch to switch at least one input signal among the fibers (col. 2, lines 37-67; fig. 1b, ref. 34a-d).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used MEMs switching devices as the optical switches in the variable optical delay line of Murray since, according to Bishop, one would be motivated by a multitude of advantages that MEMs devices offer (col. 1, lines 45-52). These include small size, fast response time, and low power consumption (col. 1, lines 45-52). Furthermore, it is becoming increasingly preferred in the optical transmission field to implement MEMs switching devices in variable optical delay lines (col. 1, lines 45-52).

5. As per claim 8-9, Murray discloses the variable optical delay line as recited above with a first (fig. 4, ref. 13) and a second region (fig. 4, ref. 14), such that the first region is different in curvature from the other paths in the plurality to provide

respectively different optical delay paths and the second region has a path that is parallel to the other paths in the plurality (fig. 4). In addition, the reference discloses optical paths secured on a substrate support that is a sheet (fig. 1, ref. 12).

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (U.S. Patent No. 5,018,816, from hereinafter "Murray").

Murray et al. disclose the variable optical delay line as recited above. Although the reference teaches optical inputs, the references, however, fail to specifically teach a plurality of optical signals, where the inputs signals are of varying wavelengths and the optical switch is an NxM MEM switch.

It would have been obvious to one of ordinary skill in the art the time the invention was made to have increased the number optical signals of varying wavelengths and have used an NxM MEM optical switch to support the additional signals. One of ordinary skill in communications systems, especially in delay line paths, would recognize that optical signals of increased number and different wavelengths are essential for large information transfer. In addition, if large amounts of information are to be transferred, one would use the well-known NxM MEM optical switch instead of a 1xN MEM since it can reflect and transmit a larger quantity of signals. Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to have increased the number optical signals of varying wavelengths and have used an NxM MEM optical switch to support the additional signals in order to support and communicate a greater amount of optical information.

Response to Arguments

7. Applicant's arguments filed 22 September 2003 have been fully considered but they are not persuasive.

In response to applicant's argument that the reflectors of the Meli reference are not switchable, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). In this case, there is no teaching in Applicant's claims or disclosure that provide the structural feature(s) that makes the reflectors switchable between reflection and transmission. Instead, the Meli reference clearly teaches plurality of reflectors (fig. 1, ref. 13a-d) that "selectively" reflect and transmit optical signals.

Therefore, Examiner holds to the validity of the references used and maintains rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gw
November 24, 2003